

## SEVERE LOCAL STORMS, JANUARY 1942

[Compiled by Mary O. Souder]

[The table herewith contains such data as has been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the United States Meteorological Yearbook]

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Conceh County, Ala., western portion.	1	2-3 p. m.				Wind	Several houses wrecked; 1 person injured.
Ponchatoula, La., vicinity of.	1	2:10 a. m.	880			do	House damaged; much timber ruined.
Theodore, Ala.	1	6:35 a. m.	150-200	1	\$15,000	Tornado	Storm moved from south to north over a path 1 mile long; 1 person injured.
Ebro, Fla., vicinity of.	1	12 noon		0		do	A house moved off its foundation and 4 other buildings demolished.
Nebraska	1					Blizzard	5 persons injured; path narrow and several yards long.
Montgomery and Robertson Counties, Tenn.	1			1	25,000	Tornado	This severe storm with heavy snow swept the south-central and eastern portions of the State.
Wisconsin	1			2		Snowfall	Storm originated southeast of Clarksville and moved eastward into Robertson County. Principal damage destruction of farm buildings and damage to trees. Hail preceded the tornado, but damage was slight.
Amite, La.	3	6 a. m.	11		3,000	Wind	From 10 to 19 inches of snow fell with drifts of from 4 to 5 feet. Most highways blocked with many automobiles stranded in drifts for several days.
Denham Springs, La., vicinity of, to Montpellier, La.	3	6:15 a. m.	880-2,200	1	3,000	do	Interurban bus traffic suspended for several hours and trains delayed.
Tennessee	3-4			4		Snow	The 2 deaths were due to exposure.
West Virginia	3-4					Snow and sleet	Two residences and several shacks damaged; 1 person injured.
North Head, Wash., and vicinity.	7				5,000	Ice	Several small houses damaged. A Negro child killed and the mother and 2 brothers injured when a tree fell on their home.
Dothan, Ala.	27	11:15-12 noon			2,500	Wind and hail	In addition to the persons killed, several were injured due to slippery roads and highways.
Bristol, Tex., and vicinity <sup>1</sup>	30			7		Tornado	Practically the entire State was covered with from 2 to 9 inches of snow.
Longview, Tex. <sup>1</sup>	30					Wind	Sleet in Clarksburg and Weston areas somewhat delayed traffic.
Tyler, Tex. <sup>1</sup>	30				40,000	Thundersquall	This storm occurred in the Columbia Basin of southwest Washington with considerable damage to communication and power lines and caused the disorganization of transportation. In some cases the glaze accumulated to the thickness of $\frac{3}{4}$ of an inch and remained for several days.
Bokoshe, Okla.	30	12:50 p. m.	100	0	3,000	Tornado	Amount given, estimated damage for North Head and vicinity only.
Dothan, Ala.	31	2:30 a. m.	1,000	0	7,000	Tornado	Principal damage to windows, roofs, and neon signs.

<sup>1</sup> Miles instead of yards.<sup>2</sup> From press reports.

## SOLAR RADIATION AND SUNSPOT DATA FOR JANUARY 1942

[Solar Radiation Investigations Section, I. F. HAND in charge]

## SOLAR RADIATION OBSERVATIONS

BY ELIDIA F. TIMMINS

Measurements of solar radiant energy received at the surface of the earth are made at 9 stations maintained by the Weather Bureau and at 11 cooperating stations maintained by other institutions. The intensity of the total radiation from sun and sky on a horizontal surface is continuously recorded (from sunrise to sunset) at all these stations by self-registering instruments; pyrheliometric measurements of the intensity of direct solar radiation at normal incidence are made at frequent intervals on clear days at three Weather Bureau stations (Madison, Wis., Lincoln, Nebr., and Albuquerque, N. Mex.), and at the Blue Hill Observatory at Harvard University.

The geographic coordinates of the stations, descriptions of the instrumental equipment, station exposures, and methods of observation, together with summaries of the data obtained, up to the end of 1939, are given in the MONTHLY WEATHER REVIEW for December 1937, April 1941, and September 1941.

Table 1 contains the measurements of the intensity of direct solar radiation at normal incidence, with means and their departures from normal (means based on less than 3 values are in parentheses). At Lincoln, Madison, Albuquerque, and Blue Hill the observations are obtained with a recording thermopile, checked by observations with a Smithsonian silver-disk pyrheliometer at Blue Hill. The table also gives vapor pressures at 7:30 a. m. and at 1:30 p. m. (75th meridian time, E. S. T.).

Table 2 contains the daily total amounts of radiation

received on a horizontal surface from both sun and sky for all stations except Fairbanks, Alaska; and also the weekly means, their departures from normal and the accumulated departures since the beginning of the year. The values at most of the stations are obtained from the Eppley pyrheliometer recording either on a microammeter or a potentiometer. If the daily figures for total solar and sky radiation at Fairbanks should be desired, they may be obtained approximately 2 months after the date of the observation by writing to the Solar Radiation Investigations Supervisory Station, Blue Hill Observatory, Milton, Mass.

Table 3 gives information about the solar radiation stations which are maintained by, or cooperate with, the Weather Bureau.

Total solar and sky radiation received on a horizontal surface during January was above normal at all stations with the exception of Lincoln, Fairbanks, La Jolla, Riverside, Blue Hill, Newport and Twin Falls; the last-named was exactly normal.

Radiation at normal incidence during January was close to normal at Lincoln and slightly below normal at Madison and Blue Hill.

Early in January an Eppley 10-junction total solar-and-sky-radiation pyrheliometer and a Leeds and Northrup micromax potentiometric recorder were installed at the Airport Office of the Weather Bureau in Nashville; latitude 36°07' North, longitude 86°41' West and altitude 602 feet. While Nashville has considerable smoke overhanging the immediate and nearby areas, the addition of this station to our solar network aids materially in rounding out the geographical distribution of pyrheliometric stations.

TABLE 1.—Solar radiation intensities during January 1942

MADISON, WIS.

[Gram-calories per minute per square centimeter of normal surface]

Date	Sun's zenith distance										Local mean solar time
	7:30 a. m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	1:30 p. m.
	Air mass										
	A. M.					P. M.					
	e.	5.0	4.0	3.0	.20	*1.0	2.0	3.0	4.0	5.0	e.
Jan. 2	mm. 1.19				cal. 1.22	cal. 1.58		cal. 1.24	0.99	cal.	mm. 0.91
Jan. 3	0.86	0.80	0.96	1.14		1.61					0.96
Jan. 5	41	.99	1.15	1.30		1.66		1.22			.43
Jan. 6	.51	.79	.98	1.22		1.60					.74
Jan. 7	.20		1.01	1.21		1.35		1.16			.36
Jan. 9	1.47	.88	1.07	1.25		1.72		1.34			.66
Jan. 10	.36		1.06	1.28							.56
Jan. 13	1.60	.90	.94	1.19		1.39		1.01			2.49
Jan. 14	3.99		.98	1.18		1.72		1.25			2.26
Jan. 15	2.87		1.01	1.22		1.76		1.03			3.81
Jan. 16	1.52	.54	.61	1.01		1.44		.99			3.30
Jan. 23	3.45	.81	1.06	1.19		1.48		1.16			4.75
Means		.82	.98	1.20		1.57		1.15	.99		
Departures		-.12	-.07	0		-.04		0	-.07		

LINCOLN, NEBR.

Jan. 2	0.56							1.27	1.16	1.04	0.91
Jan. 3	3.15							1.20	1.05	.88	4.75
Jan. 13	3.63			1.22				1.22	1.11	1.01	4.37
Jan. 14	2.74	0.90	1.01	1.16							4.17
Jan. 15	3.45		1.09	1.22				1.20	1.09	.99	4.95
Jan. 19	3.81				1.38		1.38	1.22	1.09	.99	5.16
Means		(.90)	(1.05)	1.20	(1.38)		(1.38)	1.22	1.10	.98	
Departures		-.03	0	0	0		+.03	+.03	+.05	+.05	

ALBUQUERQUE, N. MEX.

Jan. 3	2.06	1.12	1.21	1.31	1.48		1.49				2.16
Jan. 4	2.06			1.35	1.51		1.49				1.60
Jan. 8	2.74						1.40	1.18			3.81
Jan. 9	3.30	1.10	1.21	1.33	1.46		1.44	1.30	1.20	1.12	2.87
Jan. 10	2.62	1.10	1.26	1.33	1.48			1.33	1.24	1.12	2.87
Jan. 11	2.16	1.15	1.24	1.36	1.45		1.44	1.26			2.87
Jan. 12	2.74							1.26			2.87
Jan. 13	2.74	1.00	1.13	1.27			1.34	1.20	1.05	.93	3.99

TABLE 1.—Solar radiation intensities during January 1942—Con.

ALBUQUERQUE, N. MEX.—Continued

[Gram-calories per minute per square centimeter of normal surface]

Date	Sun's zenith distance										Local mean solar time
	7:30 a. m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	1:30 p. m.
	Air mass										
	A. M.					P. M.					
	e.	5.0	4.0	3.0	.20	*1.0	2.0	3.0	4.0	5.0	e.
Jan. 16	mm. 3.00				cal. 1.18	cal. 1.06		cal. 1.21	1.02	cal.	mm. 4.17
Jan. 17	4.37										4.57
Jan. 18	2.36	1.06	1.16	1.28	1.44						2.49
Jan. 19	2.74										2.87
Jan. 20	2.49										2.74
Jan. 21	1.78	1.14		1.36				1.41	1.24	1.09	.98
Jan. 22	1.70	1.08	1.18	1.29				1.46	1.34	1.20	1.09
Jan. 23	2.74	.96		1.24	1.39			1.40	1.31	1.17	1.07
Jan. 24	3.00	1.09	1.20	1.31	1.44						3.45
Jan. 25	2.36	1.06	1.18	1.29	1.44						3.30
Jan. 31	2.26							1.25	1.17	1.05	2.49
Means		1.08	1.20	1.31	1.45			1.43	1.25	1.14	1.03

BLUE HILL, MASS.

Jan. 3	2.0	0.89		1.11				1.16	0.99		2.2
Jan. 6	1.1	.86		0.97				.98	.82	0.69	1.3
Jan. 7	1.0	.53		.65							.6
Jan. 8	.6	.96							1.06	.95	1.9
Jan. 11	.6	.87	.94								2.1
Jan. 12	1.2	.87	.99						.79	.61	1.3
Jan. 13	2.3	.94		1.25				1.24	1.14	1.06	3.6
Jan. 14	1.3			.98							2.5
Jan. 15	1.3			1.11							.9
Jan. 16	1.4	1.02		1.28				1.22	1.07	1.01	1.3
Jan. 17	1.7	.99	1.10	1.24				1.22	1.07	.95	3.3
Jan. 18	2.6							.84			2.6
Jan. 21	3.2								1.02	.98	1.9
Jan. 22	2.1							1.26	1.02	.91	3.8
Jan. 24	4.4	.92	.97	1.04				1.02	.93	.80	1.2
Jan. 27	2.9							.77	.63	.55	1.1
Jan. 29	1.4		1.10	1.38				1.25	1.12	1.01	
Jan. 30	.7	1.04	1.14	1.22				1.04	.96	.86	
Means		0.90	0.98	1.15	(1.38)		(1.38)	1.09	0.97	0.87	
Departures		-.05	-.05	0	+.07			+.05	-.07	-.05	

• Extrapolated.

TABLE 2.—Average daily totals and weekly means of solar radiation (direct and diffuse) received on a horizontal surface

[Gram-calories per square centimeter]

Date	Wash- ington	Madi- son	Lin- coln	Chi- cago	New York	Fresno	Albu- querque	Fair- banks	Cam- bridge	Nash- ville	Twin Falls	La Jolla	New Orleans	River- side	Blue Hill	Friday Harbor	Ithaca	New- port	State College
	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Jan. 1	25	18	106	4	43	139	210		76		179	148	192	98	94	103	43	82	6
Jan. 2	198	210	204	175	143	216	276		69		135	306	243	296	63	26	52	79	84
Jan. 3	147	200	137	141	164	245	292		199		192	280	64	246	214	150	162	207	95
Jan. 4	98	226	197	169	21	264	309		30		165	288	88	273	30	153	40	37	48
Jan. 5	85	218	205	202	118	104	273		101		185	120	154	184	89	159	196	96	171
Jan. 6	257	218	207	204	188	212	176		201		170	274	335	275	215	108	209	221	146
Jan. 7	103	198	199	159	99	162	296		181		100	292	75	236	192	18	162	133	162
Mean	130	184	179	151	111	192	262	5	122		107	244	165	230	128	102	123	122	109
Jan. 8	238	227	84	182	218	100	294		223		167	199	348	243	231	63	252	238	195
Jan. 9	112	232	189	82	79	118	317		172		164	287	12	288	153	11	120	120	157
Jan. 10	176	217	175	208	160	87	316		83		154	280	338	282	99	88	170	67	230
Jan. 11	195	181	155	188	73	58	310		119		232	284	322	214	127	55	185	105	149
Jan. 12	247	137	193	33	150	36	288		162		230	285	372	258	181	54	98	182	193
Jan. 13	264	217	184	197	238	43			244		90	221	350	280	251	153	220	257	232
Jan. 14	241	227	192	148	157	154			192		178	301	351	248	206	148	133	205	186
Mean	211	205	167	148	153	85	305	10	171		173	265	299	259	175	80	168	168	192
Jan. 15	271	230	187	205	174	161			152		239	295	284	281	172	75	65	178	138
Jan. 16	298	238	138	188	252	92			246		101	264	306	286	251	44	167	262	265
Jan. 17	267	83	44	124	186	86			245		269	215	264	314	286	260	53	246	256
Jan. 18		28	138	39	134	278			188		158	213	214	318	216	196	83	52	207
Jan. 19	60	154	209	74	24	273			27		221	328	394	317	31	174	38	67	38
Jan. 20	200	162	141	138	217	294			156		255	280	322	317	316	157	132	83	184
Jan. 21	117	129	181	107	223	120			120		241	270	223	366	222	118	171	117	255
Mean	203	146	148	125	173	186			162		214	220	273	328	275	169	104	110	140
Jan. 22	231	247	197	67	215	109			208		265	219	238	381	224	270	105	74	261
Jan. 23	275	241	167	216	148	74			185		298	183	261	375	291	170	40	227	211
Jan. 24	249	106	212	105	190	39			240		274	235	228	387	210	252	71	220	185
Jan. 25	217	29	210	86	103	181			102		201	188	300	256	154	95	175	90	111
Jan. 26	42	67	98	69	11	201			69		279	158	180	338	235	60	94	20	46
Jan. 27	64	54	223	65	127	102			188		92	56	58	414	116	204	151	24	190
Jan. 28	49	67	123	58	4	266			42		36	93	336	418	319	33	185	57	42
Mean	161	116	176	95	114	139			148		206	162	229	367	221	155	117	102	154

TABLE 2.—Average daily totals and weekly means of solar radiation (direct diffuse) received on a horizontal surface—Continued

## DEPARTURES FROM WEEKLY NORMALS

Week begin- ning—																			
Jan. 1	-38	+55	+8	+60	-6	+46	+28	-2	+21		-43	+4	-7	-13	-12	+27	+25	-25	
Jan. 8	+58	+72	-12	+62	+33	-70	+27	-1	+72		+15	+6	+79	+17	+19	+61	+70	+3	
Jan. 15	+45	-6	-40	+22	+49	+7		-10	+60		+47	-7	+5	-17	+5	+10	-6	+30	
Jan. 22	-14	-65	-47	-25	-47	-63		-17	+19		-19	-53	+143	-33	-30	+20	-45	-37	

## ACCUMULATED DEPARTURES ON JAN. 28, 1942

	+357	+392	-637	+833	+203	-560		-210	+1,204		0	-350	+1,540	-322	-126	+826	+308	-203
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TABLE 3.—Pyrheliometric stations

Station	Under direction of—	N. latitude	W. longitude	Alti- tude	Instruments		Remarks
					Receiver	Recorder	
San Juan	U. S. Weather Bureau	18 28	66 06	85	Eppler	Modified potentiometer	Good exposure on narrow peninsula, but some interference from salt spray. Cooperation with Columbia University
New Orleans	Tulane University	29 56	90 07	100	do	L. & N. potentiometer	Good exposure; considerable cloudiness.
La Jolla	Scripps Institute of Oceanography	32 50	117 15	85	do	Engelhard	Splendid exposure a few yards inland from Pacific Ocean. Early morning fogs prevail during part of year.
Riverside	University of California	33 58	117 28	1,051	do	do	Excellent exposure in midst of citrus fruit region.
Albuquerque	U. S. Weather Bureau	35 05	106 30	5,314	do	L. & N. potentiometer	At airport; dust at times. Station has highest elevation of this group.
Nashville	do	36 07	86 41	602	do	do	At airport with good exposure, but records vitiated by soft-coal smoke in winter.
Fresno	do	36 43	119 49	330	do	do	Good exposure at airport northern edge of city. The San Joaquin Valley has an exceedingly high percentage of sunshine.
Washington	do	38 56	77 05	397	do	Bristol potentiometer	Good exposure on second highest point in District of Columbia. 5½ miles northwest of United States Capitol. Some vitiation from city smoke.
New York	do	40 46	73 58	180	do	Engelhard	Fair exposure at Central Park Meteorological Observatory. Values vitiated by large city atmospheric contamination.
Lincoln	do	40 50	96 45	1,225	do	L. & N. potentiometer	Results very representative of the Great Plains area. Some dust.
Newport	Eppler Laboratory	41 30	71 19	52	do	do	Excellent location.
Chicago	U. S. Weather Bureau	41 47	87 25	688	do	Engelhard	Good exposure on roof of Rosenwald Hall, University of Chicago. A great deal of smoke.
Blue Hill	Harvard University	42 13	71 07	640	do	Engelhard and L. & N. potentiometer	Excellent exposure on high ridge 10 miles south of Boston. With northerly component winds, some smoke contamination from Boston.
Cambridge	Massachusetts Institute of Technology	42 22	71 06	31	do	L. & N. potentiometer	Data used in studies of direct utilization of solar radiation for house heating under Cabot Fund.
Ithaca	Cornell University	42 27	76 29	953	do	do	Splendid site; data used by School of Agriculture.
Twin Falls	U. S. Bureau of Entomology	42 29	114 25	4,300	do	Engelhard	Good exposure on high plateau in rich farming country. Greatest elevation of any station here listed; exceeded only by Albuquerque where observations were recently begun.
Madison	U. S. W. B.	43 05	89 23	974	do	L. & N. potentiometer	Excellent exposure, North Hall, University of Wisconsin. Rapid growth of city has added to atmospheric vitiation recently.
Bismarck	do	46 47	100 48	1,664	do	do	To be opened this Spring. Bismarck is one of the clearest of the northerly United States cities.
Friday Harbor	University of Washington	48 32	123 01	15	do	Engelhard	Good exposure 50 miles northwest of Seattle directly on ocean; considerable fog interference.
Fairbanks	U. S. W. B.	64 52	147 39	500	do	do	Most northerly station of this kind in the world. Very little artificial contamination.
State College	U. S. W. B.	40 48	77 52	1,280	do	L. & N. potentiometer	Splendid exposure in farming country.

## POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR JANUARY 1942

[Communicated by Capt. J. F. Hellweg, U. S. Navy (Ret.), Superintendent, U. S. Naval Observatory.] All measurements and spot counts were made at the Naval Observatory from plates taken at the observatories indicated. Difference in longitude is measured from the central meridian, positive toward the west. Latitude is positive toward the north. Areas are corrected for foreshortening and expressed in millionths of Sun's hemisphere. For each day, under longitude, latitude, area of spot or group, and spot count, are included assumed longitude of center of the disk, assumed latitude of center of the disk, total area of spots and groups, and total spot count.

Date	East- ern stand- ard time	Mount Wilson group No.	Heliographic				Area of spot or group	Spot count	Plate qual- ity	Observatory
			Dif- fer- ence in longi- tude	Longi- tude	Latitude	Dis- tance from center of disk				
1942 Jan. 2	h m		°	°	°	°				
	12 42	7351	-75	153	-11	75	194	3	F	U. S. Naval.
		7350	-63	175	+8	54	73	1		
		7349	-29	199	-11	30	12	2		
		7349	-24	204	-8	25	12	2		
		7347	+68	296	-8	68	73	3		
			(228)	(-3)			364	11		

## POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR JANUARY 1942—Continued

Date	East- ern stand- ard time	Mount Wilson group No.	Heliographic				Area of spot or group	Spot count	Plate qual- ity	Observatory
			Dif- fer- ence in longi- tude	Longi- tude	Latitude	Dis- tance from center of disk				
1942 3	h m		°	°	°	°				
	10 27	7353	-78	138	-6	78	24	1	F	Do.
		7351	-64	162	-11	64	145	7		
		7352	-60	156	-7	60	24	1		
		7350	-39	177	+8	40	73	1		
		7349	-15	201	-11	17	48	6		
			(216)	(-3)			314	15		
4	13 5	7354	-70	132	-7	70	85	1	G	Do.
		7353	-67	135	-5	67	48	5		
		7355	-66	136	-11	66	12	2		
		7351	-48	154	-11	49	170	6		
		7352	-43	159	-7	43	218	12		
		7350	-26	176	+8	28	73	9		
		7349	+2	204	-11	9	24	6		
			(202)	(-3)			630	41		